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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,260	08/03/2006	Kazuo Yokoyama	2006_1271A	4232

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,260	YOKOYAMA ET AL.	
	Examiner	Art Unit	
	Derek J. Rosenau	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-30* is/are pending in the application.

4a) Of the above claim(s) *27-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/3/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 27-30 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 16 May 2008.

2. Applicant's election of the invention of group I in the reply filed on 16 May 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 11 and 31b. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. First, it is unclear whether applicant intends to claim that the electrode may be one of gold, platinum, nickel, aluminum, or stainless steel, or a combination thereof. It is also unclear whether applicant intends to claim chemical oxidation specifically, or surface treatment in general. In addition, the language ”metal including gold, platinum, nickel, titanium, and stainless steel; alloy thereof; or carbon, or any of these thin plates coated with these material groups or subjected to surface treatment such as chemical oxidation" is grammatically incorrect.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 16-19, 21-23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keiichi et al. (JP 11-169394) in view of any one either Pelrine et al. (US 7034432), or Spangler et al. (US 2005/0200243).

9. With respect to claim 16, Keiichi et al. discloses a flat-plate low-profile actuator (Fig 1), comprising: a planar conductive polymer layer (item 3b); an electrode ((item 5b) in contact with the conductive polymer layer; an opposite electrode (item 5a) opposite to the electrode; and an electrolyte layer (item 2) in contact with the conductive polymer layer, disposed in between the electrode and opposite electrode (Fig 1), the electrode being a planar electrode (Fig 1), and the conductive polymer layer being formed to be swelled and shrunken by application of electric fields to between both the electrodes (Paragraph 5).

Keiichi et al. does not disclose expressly that the planar electrode is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high.

Pelrine et al. teaches a flat-plate low-profile actuator in which the planar electrode (item 512) is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer (Fig 4), so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high (column 30, lines 8-27). In addition, the language “so that rigidity in the longitudinal direction is low while rigidity in

a width direction almost orthogonal to the longitudinal direction is high" is simply a recitation of the properties of the claimed structure. As the combination of Keiichi et al. and Pelrine et al. discloses each of the claimed structural elements of the claim, the structure resulting from that combination would have the same properties as the claimed structure.

Spangler et al. teaches a flat-plate low-profile actuator in which the planar electrode (item 111) is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer (Fig 2A). The language "so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high" is simply a recitation of the properties of the claimed structure. As the combination of Keiichi et al. and Spangler et al. discloses each of the claimed structural elements of the claim, the structure resulting from that combination would have the same properties as the claimed structure.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the bent electrode of any one of Pelrine et al., Spangler et al., or Takuchi et al. with the flat-plate low-profile actuator of Keiichi et al. for the benefit of providing single-direction compliance (column 30, lines 8-27 of Pelrine et al.), or to ensure proper connection despite the occurrence of cracks (Paragraph 61 of Spangler et al.).

10. With respect to claim 17, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim

16.Pelrine et al. discloses that the electrode is a zigzag-shaped planar electrode having a plurality of bent portions along a longitudinal direction that is the expansion and contraction direction of the conductive polymer layer (Fig 4).

11. With respect to claim 18, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. Spangler et al. discloses that the electrode is a planar electrode comprising: a plurality of band-like portions along a width direction almost orthogonal to the longitudinal direction that is the expansion and contraction direction of the conductive polymer, and link portions along the longitudinal direction for linking the adjacent band-like portions (Figs 2A or 3).

12. With respect to claim 19, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. Pelrine et al. discloses planar extension portions (Figs 2A-2C, items 204) disposed on both sides of the electrode in the longitudinal direction that is the expansion and contraction direction of the conductive polymer layer, the planar extension portions being used as force action portions (Figs 2A-2C and column 19, lines 23-44).

13. With respect to claim 21, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. Keiichi et al. discloses that the electrode and the opposite electrode are placed on the conductive polymer and stacked in such a way as to be alternately disposed (Fig 1).

14. With respect to claim 22, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. As

best the examiner can ascertain, Keiichi et al. discloses that the electrode is a thin plate made of: metal including gold, platinum, nickel, titanium, and stainless steel, alloy thereof, or carbon, or any of these thin plates coated with these material groups or subjected to surface treatment such as chemical oxidation (Paragraph 26).

15. With respect to claim 23, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. Keiichi et al. discloses that the polymer layer is composed of a pi-conjugated polymer layer with a substrate of ployaniline, polypyrrole, or polythiophene, any one of organic conductive polymers which are derivatives thereof, or a carbon dispersion conductive polymer (Paragraph 14).

16. With respect to claim 25, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16. Keiichi et al. discloses that a ratio of a thickness of the conductive polymer layer to a thickness of the electrode is not more than 3 (Fig 1).

17. With respect to claim 26, Keiichi et al. discloses a flat-plate low-profile actuator (Fig 1), comprising: a planar conductive polymer layer (item 3b); an electrode ((item 5b) in contact with the conductive polymer layer; an opposite electrode (item 5a) opposite to the electrode; and an electrolyte layer (item 2) in contact with the conductive polymer layer, disposed in between the electrode and opposite electrode (Fig 1), the electrode being a planar electrode (Fig 1), and the conductive polymer layer being formed to be swelled and shrunken by application of electric fields to between both the electrodes so that the drive force is outputted in the output direction (Paragraph 5).

Keiichi et al. does not disclose expressly that the planar electrode is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high.

Pelrine et al. teaches a flat-plate low-profile actuator in which the planar electrode (item 512) is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer (Fig 4), so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high (column 30, lines 8-27). In addition, the language "so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high" is simply a recitation of the properties of the claimed structure. As the combination of Keiichi et al. and Pelrine et al. discloses each of the claimed structural elements of the claim, the structure resulting from that combination would have the same properties as the claimed structure.

Spangler et al. teaches a flat-plate low-profile actuator in which the planar electrode (item 111) is patterned to have at least one bent portion along a longitudinal direction that is an expansion and contraction direction of the conductive polymer layer (Fig 2A). The language "so that rigidity in the longitudinal direction is low while rigidity in a width direction almost orthogonal to the longitudinal direction is high" is simply a recitation of the properties of the claimed structure. As the combination of Keiichi et al.

and Spangler et al. discloses each of the claimed structural elements of the claim, the structure resulting from that combination would have the same properties as the claimed structure.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the bent electrode of any one of Pelrine et al., Spangler et al., or Takuchi et al. with the flat-plate low-profile actuator of Keiichi et al. for the benefit of providing single-direction compliance (column 30, lines 8-27 of Pelrine et al.), or to ensure proper connection despite the occurrence of cracks (Paragraph 61 of Spangler et al.).

18. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keiichi et al. in view of Kaneko et al. (US 4651310) and either Pelrine et al. or Spangler et al.

19. With respect to claim 20, the combination of Keiichi et al. and Pelrine et al. discloses the plat-plate low-profile actuator as defined in claim 19.

Neither Keiichi et al. nor Pelrine et al. discloses expressly that the conductive polymer layer is placed on both front and back sides of the electrode, or that a hole is provided on the force action portion that is the extension portion of the electrodes so as to link the front and back conductive polymer layers for reinforcement.

Kaneko et al. teaches a flat-plate low-profile actuator in which a conductive polymer layer (items 1 and 1') is placed on both front and back sides of the electrode (Fig 14), and that a hole (item 10) is provided on the force action portion that is the extension portion of the electrodes so as to link the front and back conductive polymer layers for reinforcement (Fig 14).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the front and back polymer layers of Kaneko et al. with the flat-plate low-profile actuator of Keiichi et al. as modified by Pelrine et al. for the benefit of being able to drive with greater power and as the duplication of parts for multiple effect has been held to be obvious to a person of ordinary skill in the art (*In re Harza*, 124 USPQ 378).

20. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keiichi in view of Couvillon, Jr. (US 2005/0027198) and either Pelrine et al. or Spangler et al.

21. With respect to claim 24, the combination of Keiichi et al. and either Pelrine et al. or Spangler et al. discloses the flat-plate low-profile actuator as defined in claim 16.

None of Keiichi et al., Pelrine et al., or Spangler et al. discloses expressly that the electrolyte layer is a polymer gel or a polymer containing an ionic fluid.

Couvillon, Jr. teaches a flat-plate low-profile actuator in which e electrolyte layer is a polymer gel or a polymer containing an ionic fluid (Paragraph 43).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the polymer gel of Couvillon, Jr. and the flat-plate low-profile actuator of Keiichi et al. as modified by either Pelrine et al. or Spangler et al. as it has been held that the selection of a material based on its suitability for its intended use is obvious (*In re Leshin*, 125 USPQ 416).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is

(571)272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Derek J Rosenau
Examiner
Art Unit 2834

/D. J. R./
Examiner, Art Unit 2834

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